**ClearView Healthcare Partners**

**Take Home Test**

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**Q1)** How many patients have at least two diagnosis (Dx) claims, which can be either the same or different ICD-10 codes, with at least 30 days part between them (not necessarily consecutive), for any of following diagnosis codes within the calendar year 2023 (1/1/2023 - 12/31/2023)? i) ICD-10 code: N186, N184?

**Ans)** WITH filtered\_diagnoses AS (

SELECT

"PATIENT\_ID",

"DATE\_OF\_SERVICE",

"DIAGNOSIS\_CODE"

FROM Diagnosis

WHERE "DIAGNOSIS\_CODE" IN ('N186', 'N184') AND EXTRACT(YEAR FROM "DATE\_OF\_SERVICE") = 2023

),

pairs AS (

SELECT

a."PATIENT\_ID"

FROM filtered\_diagnoses a

JOIN filtered\_diagnoses b ON a."PATIENT\_ID" = b."PATIENT\_ID"

WHERE a."DATE\_OF\_SERVICE" > b."DATE\_OF\_SERVICE" and (a."DATE\_OF\_SERVICE" - b."DATE\_OF\_SERVICE") >= INTERVAL '30 days'

GROUP BY a."PATIENT\_ID"

HAVING COUNT(DISTINCT a."DATE\_OF\_SERVICE") >= 2

)

SELECT COUNT(\*) as "No Of Patients" FROM pairs

**Q2)** For above patients in a), what is distribution of gender? How many male patients with age >= 45 at 2023?

**Ans)** WITH filtered\_diagnoses AS (

SELECT

"PATIENT\_ID",

"DATE\_OF\_SERVICE",

"DIAGNOSIS\_CODE"

FROM Diagnosis

WHERE "DIAGNOSIS\_CODE" IN ('N186', 'N184')

AND EXTRACT(YEAR FROM "DATE\_OF\_SERVICE") = 2023

),

pairs AS (

SELECT

a."PATIENT\_ID"

FROM filtered\_diagnoses a

JOIN filtered\_diagnoses b

ON a."PATIENT\_ID" = b."PATIENT\_ID"

WHERE a."DATE\_OF\_SERVICE" > b."DATE\_OF\_SERVICE"

AND (a."DATE\_OF\_SERVICE" - b."DATE\_OF\_SERVICE") >= INTERVAL '30 days'

GROUP BY a."PATIENT\_ID"

HAVING COUNT(DISTINCT a."DATE\_OF\_SERVICE") >= 2

)

SELECT

"GENDER" as "Gender",

COUNT(a."PATIENT\_ID") as "Distibution",

SUM(CASE

WHEN ('2023' - "BIRTH\_YEAR" >= 45) AND "GENDER" = 'M'

THEN 1

ELSE 0

END) as "Male >45"

FROM pairs a

JOIN Patient b ON a."PATIENT\_ID" = b."PATIENT\_ID" GROUP BY "GENDER";

**Q3)** For the patients identified in a), apply the washout criteria by checking if they have at least one diagnosis (Dx) claim or pharmacy (Rx) claim any time before 6 months prior to the beginning of study period (1/1/2023). Output the number of patients who meet these criteria. i) Note: 6 months can be calculated as 6\*30 = 180 days

**Ans)** WITH filtered\_diagnoses AS (

SELECT

"PATIENT\_ID",

"DATE\_OF\_SERVICE",

"DIAGNOSIS\_CODE"

FROM Diagnosis

WHERE "DIAGNOSIS\_CODE" IN ('N186', 'N184') AND EXTRACT(YEAR FROM "DATE\_OF\_SERVICE") = 2023

),

pairs AS (

SELECT

a."PATIENT\_ID"

FROM filtered\_diagnoses a

JOIN filtered\_diagnoses b ON a."PATIENT\_ID" = b."PATIENT\_ID"

WHERE a."DATE\_OF\_SERVICE" > b."DATE\_OF\_SERVICE" AND (a."DATE\_OF\_SERVICE" - b."DATE\_OF\_SERVICE") >= INTERVAL '30 days'

GROUP BY a."PATIENT\_ID"

HAVING COUNT(DISTINCT a."DATE\_OF\_SERVICE") >= 2

),

washout\_diagnosis AS (

SELECT DISTINCT "PATIENT\_ID"

FROM Diagnosis

WHERE "PATIENT\_ID" IN (SELECT "PATIENT\_ID" FROM pairs)

AND "DATE\_OF\_SERVICE" < DATE '2022-07-01'

),

washout\_pharmacy AS (

SELECT DISTINCT "PATIENT\_ID"

FROM Pharmacy

WHERE "PATIENT\_ID" IN (SELECT "PATIENT\_ID" FROM pairs)

AND "DATE\_OF\_SERVICE" < DATE '2022-07-01'

),

combined\_washout AS (

SELECT "PATIENT\_ID"

FROM washout\_diagnosis

UNION

SELECT "PATIENT\_ID"

FROM washout\_pharmacy

)

SELECT COUNT(DISTINCT "PATIENT\_ID") AS "Eligible\_Patients\_with\_Washout"

FROM combined\_washout;

**Q4)** For patients in c), find # and % of patients used each drug of FUROSEMIDE, LISINOPRIL, FARXIGA, ENTRESTO within calendar year 2023 (1/1/2023 - 12/31/2023)? i) Output the patient counts by drug brands ii) Use BRAND\_NAME in Pharmacy table

**Ans)** WITH filtered\_diagnoses AS (

SELECT

"PATIENT\_ID",

"DATE\_OF\_SERVICE",

"DIAGNOSIS\_CODE"

FROM Diagnosis

WHERE "DIAGNOSIS\_CODE" IN ('N186', 'N184') AND EXTRACT(YEAR FROM "DATE\_OF\_SERVICE") = 2023

),

pairs AS (

SELECT

a."PATIENT\_ID"

FROM filtered\_diagnoses a

JOIN filtered\_diagnoses b ON a."PATIENT\_ID" = b."PATIENT\_ID"

WHERE a."DATE\_OF\_SERVICE" > b."DATE\_OF\_SERVICE" AND (a."DATE\_OF\_SERVICE" - b."DATE\_OF\_SERVICE") >= INTERVAL '30 days'

GROUP BY a."PATIENT\_ID"

HAVING COUNT(DISTINCT a."DATE\_OF\_SERVICE") >= 2

),

washout\_diagnosis AS (

SELECT DISTINCT "PATIENT\_ID"

FROM Diagnosis

WHERE "PATIENT\_ID" IN (SELECT "PATIENT\_ID" FROM pairs)

AND "DATE\_OF\_SERVICE" < DATE '2022-07-01'

),

washout\_pharmacy AS (

SELECT DISTINCT "PATIENT\_ID"

FROM Pharmacy

WHERE "PATIENT\_ID" IN (SELECT "PATIENT\_ID" FROM pairs)

AND "DATE\_OF\_SERVICE" < DATE '2022-07-01'

),

combined\_washout AS (

SELECT "PATIENT\_ID"

FROM washout\_diagnosis

UNION

SELECT "PATIENT\_ID"

FROM washout\_pharmacy

) ,

eligible\_patients AS (

SELECT DISTINCT "PATIENT\_ID"

FROM combined\_washout -- Assuming this is available from prior analysis

),

drug\_usage AS (

SELECT

"PATIENT\_ID",

"BRAND\_NAME"

FROM Pharmacy

WHERE "PATIENT\_ID" IN (SELECT "PATIENT\_ID" FROM eligible\_patients)

AND EXTRACT(YEAR FROM "DATE\_OF\_SERVICE") = 2023

AND "BRAND\_NAME" IN ('Furosemide', 'Lisinopril', 'Farxiga', 'Entresto')

),

patient\_counts AS (

SELECT

"BRAND\_NAME",

COUNT(DISTINCT "PATIENT\_ID") AS "Number\_of\_Patients"

FROM drug\_usage

GROUP BY "BRAND\_NAME"

),

total\_patients AS (

SELECT COUNT(DISTINCT "PATIENT\_ID") AS "Total" FROM eligible\_patients

)

SELECT

a."BRAND\_NAME" as “Brand\_Name”,

a."Number\_of\_Patients",

ROUND((a."Number\_of\_Patients"\* 100.0 / b."Total" ),2) AS "Percentage\_of\_Patients"

FROM patient\_counts a, total\_patients b;